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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/510,081	03/18/2005	Khaliq Ahmed	0446-0171PUS1	4223

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EXAMINER

HANDAL, KAITI V

ART UNIT	PAPER NUMBER
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1795

NOTIFICATION DATE	DELIVERY MODE
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04/01/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary	Application No. 10/510,081	Applicant(s) AHMED, KHALIQ	
	Examiner KAITY V. HANDAL	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 February 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16, 18-23, 25-27, 29 and 30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 16, 18-23, 25-27, 29 and 30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/12/2008 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 16, 18-22 and 25-27 and 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Buswell et al. (USP 5,360,679) in view of Lesieur et al. (US 6,726,836 B1).

Regarding claims 16, 18-19 and 25-27, Buswell et al. discloses a system for the method of generating hydrogen for use in a fuel cell system, comprising the steps of:

- mixing part of a hydrogen-containing stream (11) with a primary fuel (0) and is delivered to a hydrogenation catalyst (158) where organic sulfur-containing compounds

Art Unit: 1795

in the primary fuel (0) are converted to H_2S and/or non-sulfur-containing hydrocarbons; wherein the hydrogen-containing stream (11) is used for hydrodesulfurization (158) of a primary hydrocarbon fuel (0) supplied to the fuel cell system. Buswell further teaches wherein part of the hydrogen containing stream (11) is directed to a fuel cell (186) (as illustrated) (col. 7, lines 33-36).

Buswell teaches wherein said hydrogen-containing stream (11) is generated from fuel stream (4) and wherein part of said stream (11) is recycled back and is processed as set forth above. Buswell however fails to teach wherein the recycled portion of said hydrogen containing stream (11) is generated from a fuel which is essentially free of organic sulfur-containing compounds wherein the fuel stream is processed without having been subjected to hydrodesulfurization. Lesieur teaches an apparatus comprised of a reformer (fig. 1, 16) downstream a desulfurizer (8) wherein a fuel line (6) and a recycled hydrogen line (30) feed into said desulfurizer (8), therefore Lesieur's recycled hydrogen line (30) is generated from a fuel (6) which is processed using a steam reformer and is not subjected to hydrodesulfurization. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to replace the recycled hydrogen stream (11) in Buswell's process with the recycled hydrogen stream (30) of Lesieur as an obvious alternative achieving entirely expected results, absent any critical results.

Regarding claims 18-19, while Buswell et al. does not explicitly disclose said hydrogen-containing stream being used in the fuel cell system during start-up and shut-down of the system, since the reference is silent to any provision for operation of the

Art Unit: 1795

fuel cell system other than using of said hydrogen-containing stream, said hydrogen-containing stream would be, inherently, used during entire operation cycle of said fuel cell system, including during start-up and shut-down of said fuel cell system.

Regarding limitations recited in claims 27 and 29-30 which are directed to a manner of operating disclosed system, neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP § 2114 and 2115. Further, process limitations do not have patentable weight in an apparatus claim. See *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969) that states "Expressions relating the apparatus to contents thereof and to an intended operation are of no significance in determining patentability of the apparatus claim."

Regarding claims 20-22 Buswell et al. as modified discloses all of the claim limitations as set forth above, but the reference does not explicitly disclose to what degree the fuel is desulfurized. As the instant application is silent to unexpected results, it would have been an obvious choice for an ordinary artisan at the time of the invention to perform said desulfurization process until the amount of sulfur in the fuel falls below a predetermined level, for example at most 1 ppm by volume sulfur or at most 0.1 ppm by volume sulfur even entirely free of sulfur, in order to maximize efficiency of the reformer operation by balancing the cost of sulfur removal with the cost inefficient operation caused by sulfur poisoning of downstream catalyst and eventually with the cost of said catalyst replacement. See *In re Sovish*, 769 F.2d 738, 742-43, 226 USPQ 771, 774 (Fed. Cir. 1985); and *In re Bozek*, 416 F.2d 1385, 1390, 163 USPQ 545, 549 (CCPA

Art Unit: 1795

1969).

4. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Buswell et al. (USP 5,360,679) in view of Lesieur et al. (US 6,726,836 B1), as applied to claim 16, and further in view of Jeschke (DE 100 19 548 A1).

Regarding claim 23 Buswell et al. as modified discloses all of the claim limitations as set forth above, but the reference does not explicitly disclose the process wherein the fuel which is processed is selected from bioethanol, biodiesel, rapeseed oil, rapeseed methyl ester, canola oil, canola methyl ester, corn oil, hemp oil, switch grass oil, fatty acid methyl esters, linseed oil, linseed methyl ester, sunflower oil, sunflower oil methyl ester, soy bean oil, palmitic acid, lauric acid, stearic acid, lanoleic acid and mixtures of any two or more of these.

Jeschke teaches that fuels selected from bioethanol, biodiesel, rapeseed oil, rapeseed methyl ester, canola oil, canola methyl ester, corn oil, hemp oil, switch grass oil, fatty acid methyl esters, linseed oil, linseed methyl ester, sunflower oil, sunflower oil methyl ester, soy bean oil, palmitic acid, lauric acid, stearic acid, lanoleic acid and mixtures of any two or more of these can be successfully used in reforming processes to provide hydrogen for fuel cells ([0001]-[0012] and claims 3-4). Additionally, it is clear from the Jeschke disclosure that said fuels are free of sulfur and therefore using of said fuel would eliminate the necessity of sulfur removal from the fuel of modified Buswell et al.

It would have been obvious to one having ordinary skill in the art at the time of

Art Unit: 1795

the invention to use the fuel of Jeschke, as set forth above, in the modified process of Buswell et al. for the purpose of maximizing efficiency of the reformer operation by balancing the cost of sulfur removal with the cost using fuel of Jeschke. See *In re Sovish*, 769 F.2d 738, 742-43, 226 USPQ 771, 774 (Fed. Cir. 1985); and *In re Bozek*, 416 F.2d 1385, 1390, 163 USPQ 545, 549 (CCPA 1969).

Response to Arguments

Claim Objection

The objection made to claim 25 is withdrawn by examiner due to applicant's amendment made to the claim.

Prior Art Rejection

Applicant's arguments with respect to claims 16, 18-23, 25-27, and 29-30 have been considered but are moot in view of the new ground(s) of rejection as necessitated by applicant's amendments and convincing arguments regarding Lesiuer's hydrogen supply source (34) not reading on the "fuel" as in the instant claims wherein the fuel stream is processed without having been subjected to hydrodesulfurization using a steam reformer.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaity Handal whose telephone number is (571) 272-8520. The examiner can normally be reached on M-F 8-5.

Art Unit: 1795

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on (571) 272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KH

3/19/2008

/Alexa D. Neckel/

Supervisory Patent Examiner, Art Unit 1795

Search Notes

Application/Control No.

10/510,081

Examiner

KAITY V. HANDAL

Applicant(s)/Patent under
Reexamination

AHMED, KHALIQ

Art Unit

1795

SEARCHED

Class	Subclass	Date	Examiner
Updated	Search	2/20/2008	KH

INTERFERENCE SEARCHED

Class	Subclass	Date	Examiner

**SEARCH NOTES
(INCLUDING SEARCH STRATEGY)**

	DATE	EXMR
Updated Inventorship Search	2/20/2008	KH
Updated Key Word Search inEAST	2/20/2008	KH